



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,641	12/02/2003	Pierre Dierickx	2003-1733A	2011
513 7590 10/22/2007 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			EXAMINER YEE, DEBORAH	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 10/22/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/724,641	Applicant(s) DIERICKX ET AL.	
	Examiner Deborah Yee	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2007 and 27 August 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5,8-11,19 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,8-10,19 and 23 is/are rejected.
- 7) ☒ Claim(s) 11,22 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1 and 5 are objected to because of the following informalities: There is a typo-error wherein "tensil" should be --tensile--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,5, 8 to 10, 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 2000-17374 (hereinafter JP'374) alone or in view of US Patent 6, 558,483 (hereinafter Nakamura) for the reasons set forth in the previous office action dated February 15, 2007.

### ***Response to Arguments***

4. Applicant's arguments filed August 15, 2007 and August 27, 2007 have been fully considered but they are not persuasive.

5. It was argued that JP'374 does not require Ti, and the prior art examples containing Ti do not meet the equation,  $Ti \geq 3.5 \times N$ , recited by the claims. It is the Examiner's position that even though JP'374 teaches Ti as optional, it still can be present at 0.010 to 0.1% which overlaps and therefore suggest Applicants' claimed Ti range of 0.005 to 0.04%. Moreover, specific prior art example L contains 0.03%Ti and

Art Unit: 1793

0.01% N and when calculated, closely meets the claimed equation whereby 0.03%Ti is almost equal to  $3.5 \times N = 0.035$ . Since Applicants have not demonstrated criticality (e.g. by comparative test data) for  $Ti \geq 3.5 \times N$ , then it would seem that a composition with 0.03% Ti and  $3.5 \times N = 0.035$  would depict a mere difference in the proportion of elements without any attendant unexpected results, which would not patentably distinguish claims over prior art.

6. Applicant stated that JP'374 does not contain B whereas present invention requires 5 to 50 ppm. It is the Examiner's position that it would be obvious for one skilled in the art to incorporate small amounts of B to improve hardenability (equivalent to quenchability taught by Applicants) in view of Nakamura.

7. It was submitted that the recited limitations,  $B = 5-50\text{ppm}$  and  $Ti \geq 3.5 \times N$ , are critical in order to ensure that bainite will be the only present phase since both limitations are necessary to help push the ferritic field to the right part of the diagram, so that during the cooling which follows forging, the steel is not likely to cross the ferritic field and goes directly from the austenitic field to the bainite field; and JP'374 fails to recognize the need for B, and the need for  $Ti \geq 3.5 \times N$ . It is the Examiner's position that B and  $Ti \geq 3.5 \times N$  limitations are not shown to be critical since Applicants' specification on pages 10 to 11 discloses alloys 1 to 3, which are the only examples that are representative of the present invention, and contain no Ti, B and/ or N and do not meet  $Ti \geq 3.5 \times N$  yet still are able to achieve present invention microstructure. Applicants refer to document 1 but it appears to be missing with their remarks.

Art Unit: 1793

8. In regard to S, it can be present in JP'374 alloy at an impurity level or intentional added in a range of 0.04 to 0.01% to improve machinability, and would overlap and suggest present invention range of 0.005 to 0.2%. Moreover, JP'374 alloy contains 0.05 to 1% Mo which overlaps with claimed Mo range of traces to 0.30%.

9. It was stated that a high Re/Rm ratio is desired by prior art but not by present invention. JP'374 would still, however, be similar to present invention since prior art in table 3 teaches a tensile strength of at least 1000 MPA to 1300 MPA and a yield strength of at least 900 MPA and therefore meet Applicants' claim 1 property limitations.

10. Applicants stated present invention aims to avoid the presence of ferrite, by a combination of a selected steel composition and precise requirements regarding the cooling speed between 600 and 300C, that is within the temperature range where ferrite would possibly be formed. In contrast JP'374 teaches controlling cooling speed between 800 to 500C and avoiding the presence of ferrite is not essential at all, since up to 30% of the structure may be another phase other than bainite. Although JP'374 teaches control cooling between 800 and 500 C, slow cooling continues down to a temperature  $\leq 200\text{C}$  as stated in the English abstract. Moreover, the computer-generated English translation of JP'374 on page 8 in paragraph [0033] discloses examples are air cooled to room temperature. Hence prior art would meet the present invention limitation of air cooling between 600 to 300C.

***Allowable Subject Matter***

11. Claim 11, 22 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The method of fabricating a steel part and its product as recited by claims 11, 22 and 24 are not taught or fairly suggested by the art of record for the reasons as set forth in Applicants' remarks dated August 15, 2007 and noted by the Examiner.

13. Japanese patent 2000-17374 does not disclose a steel containing 0.5 to 3.5% Cu or 2 to 4.5% Ni and 1 to 2%Al as recited by the claims

14. Takada et al. (US Patent 5,660,648) does not disclose a steel containing 0.5 to 3.5% Cu or 2 to 4.5% Ni and 1 to 2%Al, and satisfying  $Ti \geq 3.5 \times N$  as recited by the claims.

15. Nakamura et al. (US Patent 6,558,483) discloses a steel exhibiting a tensile strength no higher than 860 MPA and yield strength of no higher than 833 MPA, which are significantly lower than tensile strength of 1000-1300 MPA and yield strength of greater than or equal to 900 MPA recited by the claims.

16. Japanese patent 2001-152246 does not disclose a steel satisfying  $Ti \geq 3.5 \times N$  as recited by the claims. Moreover, prior art process requires cooling with an isothermal step whereas claimed process recites cooling.

17. Hill et al. (Re. 28,523) discloses a method of fabricating a steel by hot deforming at 802-815C, quick cooling, isothermal treatment and tempering at about 315C whereas

Art Unit: 1793

claims recite hot forging at 1100-1300C, slow air cooling at no higher than 3C/sec in the range of 600 to 300C without isothermal treatment, and age annealing at a temperature of  $\geq 425\text{C}$  or  $\geq 500\text{C}$ .

### ***Conclusion***

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2: 30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1793

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/  
Primary Examiner  
Art Unit 1793

/DY/